



SEQUENCE LISTING

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ZHANG, KAM

<120> PDE5A CRYSTAL STRUCTURE AND USES

<130> 039363-1106

<140> 10/771,833

<141> 2004-02-03

<150> 60/485,627

<151> 2003-07-07

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<170> PatentIn Ver. 3.3

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<213> Homo sapiens

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Trp Leu Asp Asp His Trp Asp Phe Thr Phe Ser Tyr Phe Val Arg Lys
35 40 45

Ala Thr Arg Glu Met Val Asn Ala Trp Phe Ala Glu Arg Val His Thr
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Ile Pro Val Cys Lys Glu Gly Ile Arg Gly His Thr Glu Ser Cys Ser
65 70 75 80

Cys Pro Leu Gln Gln Ser Pro Arg Ala Asp Asn Ser Val Pro Gly Thr
85 90 95

Pro Thr Arg Lys Ile Ser Ala Ser Glu Phe Asp Arg Pro Leu Arg Pro
100 105 110

Ile Val Val Lys Asp Ser Glu Gly Thr Val Ser Phe Leu Ser Asp Ser
115 120 125

Glu Lys Lys Glu Gln Met Pro Leu Thr Pro Pro Arg Phe Asp His Asp
130 135 140

Glu Gly Asp Gln Cys Ser Arg Leu Leu Glu Leu Val Lys Asp Ile Ser
 145 150 155 160
 Ser His Leu Asp Val Thr Ala Leu Cys His Lys Ile Phe Leu His Ile
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 His Gly Leu Ile Ser Ala Asp Arg Tyr Ser Leu Phe Leu Val Cys Glu
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 Asp Ser Ser Asn Asp Lys Phe Leu Ile Ser Arg Leu Phe Asp Val Ala
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 Glu Gly Ser Thr Leu Glu Glu Val Ser Asn Asn Cys Ile Arg Leu Glu
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 Trp Asn Lys Gly Ile Val Gly His Val Ala Ala Leu Gly Glu Pro Leu
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 245 250 255
 Gln Ile Thr Gly Tyr Lys Thr Gln Ser Ile Leu Cys Met Pro Ile Lys
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 Ala Tyr Leu Ala Phe Cys Gly Ile Val Leu His Asn Ala Gln Leu Tyr
 305 310 315 320
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Arg Ser Leu Leu Cys Thr Pro Ile Lys Asn Gly Lys Lys Asn Lys Val
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 515 520 525
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 Leu Ala Thr Asp Leu Ala Leu Tyr Ile Lys Arg Arg Gly Glu Phe Phe
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<213> Homo sapiens
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                                     Met Gly Ser
                                     1
agc cat cat cat cat cat cac agc agc ggc ctg gtg ccg cgc ggc agc 164
Ser His His His His His His Ser Ser Gly Leu Val Pro Arg Gly Ser
      5              10              15
cat atg ggatccggaa ttcaaaggcc tacgtcgact agagcctgca gtctcgacca 220
His Met
      20
tcatcatcat catcattaat aaaagggcga attccagcac actggcggcc gttactagt 280
gatccggctg ctaacaaagc ccgaaaggaa gctgagttgg ctgctgccac cgctgagcaa 340
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<211> 21

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<211> 6

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
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<400> 7

His His His His His His

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<210> 8

<211> 366

<212> PRT

<213> Homo sapiens

<400> 8

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25

30

Ser Leu Ala Ala Ala Val Val Pro Ser Ala Gln Thr Leu Lys Ile Thr

35

40

45

Asp Phe Ser Phe Ser Asp Phe Glu Leu Ser Asp Leu Glu Thr Ala Leu

50

55

60

Cys Thr Ile Arg Met Phe Thr Asp Leu Asn Leu Val Gln Asn Phe Gln

65

70

75

80

Met Lys His Glu Val Leu Cys Arg Trp Ile Leu Ser Val Lys Lys Asn

85

90

95

Tyr Arg Lys Asn Val Ala Tyr His Asn Trp Arg His Ala Phe Asn Thr

100

105

110

Ala Gln Cys Met Phe Ala Ala Leu Lys Ala Gly Lys Ile Gln Asn Lys

115

120

125

Leu Thr Asp Leu Glu Ile Leu Ala Leu Leu Ile Ala Ala Leu Ser His

130

135

140

Asp Leu Asp His Arg Gly Val Asn Asn Ser Tyr Ile Gln Arg Ser Glu

145

150

155

160

His Pro Leu Ala Gln Leu Tyr Cys His Ser Ile Met Glu His His His

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170

175

Phe Asp Gln Cys Leu Met Ile Leu Asn Ser Pro Gly Asn Gln Ile Leu

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185

190

Ser Gly Leu Ser Ile Glu Glu Tyr Lys Thr Thr Leu Lys Ile Ile Lys

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200

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Gln Ala Ile Leu Ala Thr Asp Leu Ala Leu Tyr Ile Lys Arg Arg Gly

210

215

220

Glu Phe Phe Glu Leu Ile Arg Lys Asn Gln Phe Asn Leu Glu Asp Pro

225

230

235

240

His Gln Lys Glu Leu Phe Leu Ala Met Leu Met Thr Ala Cys Asp Leu

245

250

255

Ser Ala Ile Thr Lys Pro Trp Pro Ile Gln Gln Arg Ile Ala Glu Leu
 260 265 270
 Val Ala Thr Glu Phe Phe Asp Gln Gly Asp Arg Glu Arg Lys Glu Leu
 275 280 285
 Asn Ile Glu Pro Thr Asp Leu Met Asn Arg Glu Lys Lys Asn Lys Ile
 290 295 300
 Pro Ser Met Gln Val Gly Phe Ile Asp Ala Ile Cys Leu Gln Leu Tyr
 305 310 315 320
 Glu Ala Leu Thr His Val Ser Glu Asp Cys Phe Pro Leu Leu Asp Gly
 325 330 335
 Cys Arg Lys Asn Arg Gln Lys Trp Gln Ala Leu Ala Glu Gln Gln Glu
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<210> 9

<211> 1185

<212> DNA

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ggtgccatct gcccagaccc ttaaaattac tgactttagc ttcagtgact ttgagctgtc 180
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cttccagatg aaacatgagg ttctttgcag atggatttta agtggttaaga agaattatcg 300
gaagaatgtt gcctatcata attggagaca tgcctttaat acagctcagt gcatgtttgc 360
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gattgctgca ctaagccacg atttggatca ccgtgggtgtg aataactctt acatacagcg 480
aagtgaacat ccacttgccc agctttactg ccattcaatc atggaacacc atcattttga 540
ccagtgcctg atgattctta atagtccagg caatcagatt ctgagtggcc tctccattga 600
agaatataag accacgttga aaataatcaa gcaagctatt ttagctacag acctagcact 660
gtacattaag aggcgaggag aattttttga acttataaga aaaaatcaat tcaatttggg 720
agatcctcat caaaaggagt tgtttttggc aatgctgatg acagcttgtg atctttctgc 780
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<213> Homo sapiens
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Ile	Phe	Asn	Val	Ala	Gly	Tyr	Ser	His	Asn	Arg	Pro	Leu	Thr	Cys	Ile		
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Met	Tyr	Ala	Ile	Phe	Gln	Glu	Arg	Asp	Leu	Leu	Lys	Thr	Phe	Arg	Ile		
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Gln	Ser	Thr	His	Val	Leu	Leu	Ser	Thr	Pro	Ala	Leu	Asp	Ala	Val	Phe		
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Asp	Met	Val	Leu	Ala	Thr	Asp	Met	Ser	Lys	His	Met	Ser	Leu	Leu	Ala		
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Asp	Leu	Lys	Thr	Met	Val	Glu	Thr	Lys	Lys	Val	Thr	Ser	Ser	Gly	Val		
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Val	His	Cys	Ala	Asp	Leu	Ser	Asn	Pro	Thr	Lys	Ser	Leu	Glu	Leu	Tyr		
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Arg	Gln	Trp	Thr	Asp	Arg	Ile	Met	Glu	Glu	Phe	Phe	Gln	Gln	Gly	Asp		
			260					265					270				

Lys Glu Arg Glu Arg Gly Met Glu Ile Ser Pro Met Cys Asp Lys His
 275 280 285

Thr Ala Ser Val Glu Lys Ser Gln Val Gly Phe Ile Asp Tyr Ile Val
 290 295 300

His Pro Leu Trp Glu Thr Trp Ala Asp Leu Val Gln Pro Asp Ala Gln
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Ile Pro Gln Ser Pro
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<212> PRT

<213> Homo sapiens

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Ala Gly Tyr Ser His Asn Arg Pro Leu Thr Cys Ile Met Tyr Ala Ile
 35 40 45

Phe Gln Glu Arg Asp Leu Leu Lys Thr Phe Arg Ile Ser Ser Asp Thr
 50 55 60

Phe Ile Thr Tyr Met Met Thr Leu Glu Asp His Tyr His Ser Asp Val
 65 70 75 80

Ala Tyr His Asn Ser Leu His Ala Ala Asp Val Ala Gln Ser Thr His
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Val Leu Leu Ser Thr Pro Ala Leu Asp Ala Val Phe Thr Asp Leu Glu
 100 105 110

Ile Leu Ala Ala Ile Phe Ala Ala Ala Ile His Asp Val Asp His Pro
 115 120 125

Gly Val Ser Asn Gln Phe Leu Ile Asn Thr Asn Ser Glu Leu Ala Leu
 130 135 140

Met Tyr Asn Asp Glu Ser Val Leu Glu Asn His His Leu Ala Val Gly
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Phe Lys Leu Leu Gln Glu Glu His Cys Asp Ile Phe Met Asn Leu Thr
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Arg Gly Met Glu Ile Ser Pro Met Cys Asp Lys His Thr Ala Ser Val
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Glu Lys Ser Gln Val Gly Phe Ile Asp Tyr Ile Val His Pro Leu Trp
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Glu Thr Trp Ala Asp Leu Val Gln Pro Asp Ala Gln Asp Ile Leu Asp
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 Asp Ile Val Leu Ala Thr Asp Met Ser Lys His Met Asn Leu Leu Ala
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 210 215 220
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 Val His Cys Ala Asp Leu Ser Asn Pro Thr Lys Pro Leu Gln Leu Tyr
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 260 265 270
 Arg Glu Arg Glu Arg Gly Met Glu Ile Ser Pro Met Cys Asp Lys His
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 Asp Ile Leu Asp Thr Leu Glu Asp Asn Arg Glu Trp Tyr Gln Ser Thr
 325 330 335
 Ile Pro Gln Ser Pro
 340

<210> 13
 <211> 341
 <212> PRT
 <213> Homo sapiens

<400> 13
 Leu Asn Asn Ser Asn Ile Pro Arg Phe Gly Val Lys Thr Asp Gln Glu
 1 5 10 15
 Glu Leu Leu Ala Gln Glu Leu Glu Asn Leu Asn Lys Trp Gly Leu Asn
 20 25 30

Ile Phe Cys Val Ser Asp Tyr Ala Gly Gly Arg Ser Leu Thr Cys Ile
 35 40 45
 Met Tyr Met Ile Phe Gln Glu Arg Asp Leu Leu Lys Lys Phe Arg Ile
 50 55 60
 Pro Val Asp Thr Met Val Thr Tyr Met Leu Thr Leu Glu Asp His Tyr
 65 70 75 80
 His Ala Asp Val Ala Tyr His Asn Ser Leu His Ala Ala Asp Val Leu
 85 90 95
 Gln Ser Thr His Val Leu Leu Ala Thr Pro Ala Leu Asp Ala Val Phe
 100 105 110
 Thr Asp Leu Glu Ile Leu Ala Ala Leu Phe Ala Ala Ala Ile His Asp
 115 120 125
 Val Asp His Pro Gly Val Ser Asn Gln Phe Leu Ile Asn Thr Asn Ser
 130 135 140
 Glu Leu Ala Leu Met Tyr Asn Asp Glu Ser Val Leu Glu Asn His His
 145 150 155 160
 Leu Ala Val Gly Phe Lys Leu Leu Gln Glu Asp Asn Cys Asp Ile Phe
 165 170 175
 Gln Asn Leu Ser Lys Arg Gln Arg Gln Ser Leu Arg Lys Met Val Ile
 180 185 190
 Asp Met Val Leu Ala Thr Asp Met Ser Lys His Met Thr Leu Leu Ala
 195 200 205
 Asp Leu Lys Thr Met Val Glu Thr Lys Lys Val Thr Ser Ser Gly Val
 210 215 220
 Leu Leu Leu Asp Asn Tyr Ser Asp Arg Ile Gln Val Leu Arg Asn Met
 225 230 235 240
 Val His Cys Ala Asp Leu Ser Asn Pro Thr Lys Pro Leu Glu Leu Tyr
 245 250 255
 Arg Gln Trp Thr Asp Arg Ile Met Ala Glu Phe Phe Gln Gln Gly Asp
 260 265 270
 Arg Glu Arg Glu Arg Gly Met Glu Ile Ser Pro Met Cys Asp Lys His
 275 280 285
 Thr Ala Ser Val Glu Lys Ser Gln Val Gly Phe Ile Asp Tyr Ile Val
 290 295 300
 His Pro Leu Trp Glu Thr Trp Ala Asp Leu Val His Pro Asp Ala Gln
 305 310 315 320
 Glu Ile Leu Asp Thr Leu Glu Asp Asn Arg Asp Trp Tyr Tyr Ser Ala
 325 330 335

Ile Arg Gln Ser Pro
340

<210> 14
<211> 341
<212> PRT
<213> Homo sapiens

<400> 14
Leu Ser Ser Ala Thr Val Pro Arg Phe Gly Val Gln Thr Asp Gln Glu
1 5 10 15
Glu Gln Leu Ala Lys Asp Val Glu Asp Thr Asn Lys Trp Gly Leu Asp
20 25 30
Val Phe Lys Val Ala Glu Leu Ser Gly Asn Arg Pro Leu Thr Ala Ile
35 40 45
Ile Phe Ser Ile Phe Gln Glu Arg Asp Leu Leu Lys Thr Phe Gln Ile
50 55 60
Pro Ala Asp Thr Leu Ala Thr Tyr Leu Leu Met Leu Glu Gly His Tyr
65 70 75 80
His Ala Asn Val Ala Tyr His Asn Ser Leu His Ala Ala Asp Val Ala
85 90 95
Gln Ser Thr His Val Leu Leu Ala Thr Pro Ala Leu Glu Ala Val Phe
100 105 110
Thr Asp Leu Glu Ile Leu Ala Ala Leu Phe Ala Ser Ala Ile His Asp
115 120 125
Val Asp His Pro Gly Val Ser Asn Gln Phe Leu Ile Asn Thr Asn Ser
130 135 140
Asp Val Ala Leu Met Tyr Asn Asp Ala Ser Val Leu Glu Asn His His
145 150 155 160
Leu Ala Val Gly Phe Lys Leu Leu Gln Ala Glu Asn Cys Asp Ile Phe
165 170 175
Gln Asn Leu Ser Ala Lys Gln Arg Leu Ser Leu Arg Arg Met Val Ile
180 185 190
Asp Met Val Leu Ala Thr Asp Met Ser Lys His Met Asn Leu Leu Ala
195 200 205
Asp Leu Lys Thr Met Val Glu Thr Lys Lys Val Thr Ser Leu Gly Val
210 215 220
Leu Leu Leu Asp Asn Tyr Ser Asp Arg Ile Gln Val Leu Gln Asn Leu
225 230 235 240
Val His Cys Ala Asp Leu Ser Asn Pro Thr Lys Pro Leu Pro Leu Tyr
245 250 255

15

Arg Gln Trp Thr Asp Arg Ile Met Ala Glu Phe Phe Gln Gln Gly Asp
260 265 270

Arg Glu Arg Glu Ser Gly Leu Asp Ile Ser Pro Met Cys Asp Lys His
275 280 285

Thr Ala Ser Val Glu Lys Ser Gln Val Gly Phe Ile Asp Tyr Ile Ala
290 295 300

His Pro Leu Trp Glu Thr Trp Ala Asp Leu Val His Pro Asp Ala Gln
305 310 315 320

Asp Leu Leu Asp Thr Leu Glu Asp Asn Arg Glu Trp Tyr Gln Ser Lys
325 330 335

Ile Pro Arg Ser Pro
340

<210> 15

<211> 392

<212> PRT

<213> Homo sapiens

<400> 15

Glu Arg Met Tyr Arg Lys Thr Tyr His Met Val Gly Leu Ala Tyr Pro
1 5 10 15

Ala Ala Val Ile Val Thr Leu Lys Asp Val Asp Lys Trp Ser Phe Asp
20 25 30

Val Phe Ala Leu Asn Glu Ala Ser Gly Glu His Ser Leu Lys Phe Met
35 40 45

Ile Tyr Glu Leu Phe Thr Arg Tyr Asp Leu Ile Asn Arg Phe Lys Ile
50 55 60

Pro Val Ser Cys Leu Ile Thr Phe Ala Glu Ala Leu Glu Val Gly Tyr
65 70 75 80

Ser Lys Tyr Lys Asn Pro Tyr His Asn Leu Ile His Ala Ala Asp Val
85 90 95

Thr Gln Thr Val His Tyr Ile Met Leu His Thr Gly Ile Met His Trp
100 105 110

Leu Thr Glu Leu Glu Ile Leu Ala Met Val Phe Ala Ala Ala Ile His
115 120 125

Asp Tyr Glu His Thr Gly Thr Thr Asn Asn Phe His Ile Gln Thr Arg
130 135 140

Ser Asp Val Ala Ile Leu Tyr Asn Asp Arg Ser Val Leu Glu Asn His
145 150 155 160

His Val Ser Ala Ala Tyr Arg Leu Met Gln Glu Glu Glu Met Asn Ile
165 170 175

Leu Ile Asn Leu Ser Lys Asp Asp Trp Arg Asp Leu Arg Asn Leu Val
 180 185 190
 Ile Glu Met Val Leu Ser Thr Asp Met Ser Gly His Phe Gln Gln Ile
 195 200 205
 Lys Asn Ile Arg Asn Ser Leu Gln Gln Pro Glu Gly Ile Asp Arg Ala
 210 215 220
 Lys Thr Met Ser Leu Ile Leu His Ala Ala Asp Ile Ser His Pro Ala
 225 230 235 240
 Lys Ser Trp Lys Leu His Tyr Arg Trp Thr Met Ala Leu Met Glu Glu
 245 250 255
 Phe Phe Leu Gln Gly Asp Lys Glu Ala Glu Leu Gly Leu Pro Phe Ser
 260 265 270
 Pro Leu Cys Asp Arg Lys Ser Thr Met Val Ala Gln Ser Gln Ile Gly
 275 280 285
 Phe Ile Asp Phe Ile Val Glu Pro Thr Phe Ser Leu Leu Thr Asp Ser
 290 295 300
 Thr Glu Lys Ile Val Ile Pro Leu Ile Glu Glu Ala Ser Lys Ala Glu
 305 310 315 320
 Thr Ser Ser Tyr Val Ala Ser Ser Ser Thr Thr Ile Val Gly Leu His
 325 330 335
 Ile Ala Asp Ala Leu Arg Arg Ser Asn Thr Lys Gly Ser Met Ser Asp
 340 345 350
 Gly Ser Tyr Ser Pro Asp Tyr Ser Leu Ala Ala Val Asp Leu Lys Ser
 355 360 365
 Phe Lys Asn Asn Leu Val Asp Ile Ile Gln Gln Asn Lys Glu Arg Trp
 370 375 380
 Lys Glu Leu Ala Ala Gln Arg Ala
 385 390

<210> 16

<211> 389

<212> PRT

<213> Homo sapiens

<400> 16

Glu Arg Met Tyr Arg Arg Thr Ser Asn Met Val Gly Leu Ser Tyr Pro
 1 5 10 15
 Pro Ala Val Ile Glu Ala Leu Lys Asp Val Asp Lys Trp Ser Phe Asp
 20 25 30
 Val Phe Ser Leu Asn Glu Ala Ser Gly Asp His Ala Leu Lys Phe Ile
 35 40 45

Phe	Tyr	Glu	Leu	Leu	Thr	Arg	Tyr	Asp	Leu	Ile	Ser	Arg	Phe	Lys	Ile	50	55	60	
Pro	Ile	Ser	Ala	Leu	Val	Ser	Phe	Val	Glu	Ala	Leu	Glu	Val	Gly	Tyr	65	70	75	80
Ser	Lys	His	Lys	Asn	Pro	Tyr	His	Asn	Leu	Met	His	Ala	Ala	Asp	Val	85	90	95	
Thr	Gln	Thr	Val	His	Tyr	Leu	Leu	Tyr	Lys	Thr	Gly	Val	Ala	Asn	Trp	100	105	110	
Leu	Thr	Glu	Leu	Glu	Ile	Phe	Ala	Ile	Ile	Phe	Ser	Ala	Ala	Ile	His	115	120	125	
Asp	Tyr	Glu	His	Thr	Gly	Thr	Asn	Asn	Phe	His	Ile	Gln	Thr	Arg		130	135	140	
Ser	Asp	Pro	Ala	Ile	Leu	Tyr	Asn	Asp	Arg	Ser	Val	Leu	Glu	Asn	His	145	150	155	160
His	Leu	Ser	Ala	Ala	Tyr	Arg	Leu	Leu	Gln	Asp	Asp	Glu	Glu	Met	Asn	165	170	175	
Ile	Leu	Ile	Asn	Leu	Ser	Lys	Asp	Asp	Trp	Arg	Glu	Phe	Arg	Thr	Leu	180	185	190	
Val	Ile	Glu	Met	Val	Met	Ala	Thr	Asp	Met	Ser	Cys	His	Phe	Gln	Gln	195	200	205	
Ile	Lys	Ala	Met	Lys	Thr	Ala	Leu	Gln	Gln	Pro	Glu	Ala	Ile	Glu	Lys	210	215	220	
Pro	Lys	Ala	Leu	Ser	Leu	Met	Leu	His	Thr	Ala	Asp	Ile	Ser	His	Pro	225	230	235	240
Ala	Lys	Ala	Trp	Asp	Leu	His	His	Arg	Trp	Thr	Met	Ser	Leu	Leu	Glu	245	250	255	
Glu	Phe	Phe	Arg	Gln	Gly	Asp	Arg	Glu	Ala	Glu	Leu	Gly	Leu	Pro	Phe	260	265	270	
Ser	Pro	Leu	Cys	Asp	Arg	Lys	Ser	Thr	Met	Val	Ala	Gln	Ser	Gln	Val	275	280	285	
Gly	Phe	Ile	Asp	Phe	Ile	Val	Glu	Pro	Thr	Phe	Thr	Val	Leu	Thr	Asp	290	295	300	
Met	Thr	Glu	Lys	Ile	Val	Ser	Pro	Leu	Ile	Asp	Glu	Thr	Ser	Gln	Thr	305	310	315	320
Gly	Gly	Thr	Gly	Gln	Arg	Arg	Ser	Ser	Leu	Asn	Ser	Ile	Ser	Ser	Ser	325	330	335	
Asp	Ala	Lys	Arg	Ser	Gly	Val	Lys	Thr	Ser	Gly	Ser	Glu	Gly	Ser	Ala	340	345	350	

Pro Ile Asn Asn Ser Val Ile Ser Val Asp Tyr Lys Ser Phe Lys Ala
 355 360 365

Thr Trp Thr Glu Val Val His Ile Asn Arg Glu Arg Trp Arg Ala Lys
 370 375 380

Val Pro Lys Glu Glu
 385

<210> 17

<211> 369

<212> PRT

<213> Homo sapiens

<400> 17

Glu Arg Met Phe Arg Arg Thr Tyr Thr Ser Val Gly Pro Thr Tyr Ser
 1 5 10 15

Thr Ala Val Leu Asn Cys Leu Lys Asn Leu Asp Leu Trp Cys Phe Asp
 20 25 30

Val Phe Ser Leu Asn Gln Ala Ala Asp Asp His Ala Leu Arg Thr Ile
 35 40 45

Val Phe Glu Leu Leu Thr Arg His Asn Leu Ile Ser Arg Phe Lys Ile
 50 55 60

Pro Thr Val Phe Leu Met Ser Phe Leu Asp Ala Leu Glu Thr Gly Tyr
 65 70 75 80

Gly Lys Tyr Lys Asn Pro Tyr His Asn Gln Ile His Ala Ala Asp Val
 85 90 95

Thr Gln Thr Val His Cys Phe Leu Leu Arg Thr Gly Met Val His Cys
 100 105 110

Leu Ser Glu Ile Glu Leu Leu Ala Ile Ile Phe Ala Ala Ala Ile His
 115 120 125

Asp Tyr Glu His Thr Gly Thr Thr Asn Ser Phe His Ile Gln Thr Lys
 130 135 140

Ser Glu Cys Ala Ile Val Tyr Asn Asp Arg Ser Val Leu Glu Asn His
 145 150 155 160

His Ile Ser Ser Val Phe Arg Leu Met Gln Asp Asp Glu Met Asn Ile
 165 170 175

Phe Ile Asn Leu Thr Lys Asp Glu Phe Val Glu Leu Arg Ala Leu Val
 180 185 190

Ile Glu Met Val Leu Ala Thr Asp Met Ser Cys His Phe Gln Gln Val
 195 200 205

Lys Thr Met Lys Thr Ala Leu Gln Gln Leu Glu Arg Ile Asp Lys Pro
 210 215 220

Lys Ala Leu Ser Leu Leu Leu His Ala Ala Asp Ile Ser His Pro Thr
 225 230 235 240
 Lys Gln Trp Leu Val His Ser Arg Trp Thr Lys Ala Leu Met Glu Glu
 245 250 255
 Phe Phe Arg Gln Gly Asp Lys Glu Ala Glu Leu Gly Leu Pro Phe Ser
 260 265 270
 Pro Leu Cys Asp Arg Thr Ser Thr Leu Val Ala Gln Ser Gln Ile Gly
 275 280 285
 Phe Ile Asp Phe Ile Val Glu Pro Thr Phe Ser Val Leu Thr Asp Val
 290 295 300
 Ala Glu Lys Ser Val Gln Pro Leu Ala Asp Glu Asp Ser Lys Ser Lys
 305 310 315 320
 Asn Gln Pro Ser Phe Gln Trp Arg Gln Pro Ser Leu Asp Val Glu Val
 325 330 335
 Gly Asp Pro Asn Pro Asp Val Val Ser Phe Arg Ser Thr Trp Val Lys
 340 345 350
 Arg Ile Gln Glu Asn Lys Gln Lys Trp Lys Glu Arg Ala Ala Ser Gly
 355 360 365

Ile

<210> 18
 <211> 430
 <212> PRT
 <213> Homo sapiens

<400> 18
 Met Phe Leu Asp Lys Pro Ile Leu Ala Pro Glu Pro Leu Val Met Asp
 1 5 10 15
 Asn Leu Asp Ser Ile Met Glu Gln Leu Asn Thr Trp Asn Phe Pro Ile
 20 25 30
 Phe Asp Leu Val Glu Asn Ile Gly Arg Lys Cys Gly Arg Ile Leu Ser
 35 40 45
 Gln Val Ser Tyr Arg Leu Phe Glu Asp Met Gly Leu Phe Glu Ala Phe
 50 55 60
 Lys Ile Pro Ile Arg Glu Phe Met Asn Tyr Phe His Ala Leu Glu Ile
 65 70 75 80
 Gly Tyr Arg Asp Ile Pro Tyr His Asn Arg Ile His Ala Thr Asp Val
 85 90 95
 Leu His Ala Val Trp Tyr Leu Thr Thr Gln Pro Ile Pro Gly Leu Ser
 100 105 110

Thr Val Ile Asn Asp His Gly Ser Thr Ser Asp Ser Asp Ser Asp Ser
 115 120 125
 Gly Phe Thr His Gly His Met Gly Tyr Val Phe Ser Lys Thr Tyr Asn
 130 135 140
 Val Thr Asp Asp Lys Tyr Gly Cys Leu Ser Gly Asn Ile Pro Ala Leu
 145 150 155 160
 Glu Leu Met Ala Leu Tyr Val Ala Ala Ala Met His Asp Tyr Asp His
 165 170 175
 Pro Gly Arg Thr Asn Ala Phe Leu Val Ala Thr Ser Ala Pro Gln Ala
 180 185 190
 Val Leu Tyr Asn Asp Arg Ser Val Leu Glu Asn His His Ala Ala Ala
 195 200 205
 Ala Trp Asn Leu Phe Met Ser Arg Pro Glu Tyr Asn Phe Leu Ile Asn
 210 215 220
 Leu Asp His Val Glu Phe Lys His Phe Arg Phe Leu Val Ile Glu Ala
 225 230 235 240
 Ile Leu Ala Thr Asp Leu Lys Lys His Phe Asp Phe Val Ala Lys Phe
 245 250 255
 Asn Gly Lys Val Asn Asp Asp Val Gly Ile Asp Trp Thr Asn Glu Asn
 260 265 270
 Asp Arg Leu Leu Val Cys Gln Met Cys Ile Lys Leu Ala Asp Ile Asn
 275 280 285
 Gly Pro Ala Lys Cys Lys Glu Leu His Leu Gln Trp Thr Asp Gly Ile
 290 295 300
 Val Asn Glu Phe Tyr Glu Gln Gly Asp Glu Glu Ala Ser Leu Gly Leu
 305 310 315 320
 Pro Ile Ser Pro Phe Met Asp Arg Ser Ala Pro Gln Leu Ala Asn Leu
 325 330 335
 Gln Glu Ser Phe Ile Ser His Ile Val Gly Pro Leu Cys Asn Ser Tyr
 340 345 350
 Asp Ser Ala Gly Leu Met Pro Gly Lys Trp Val Glu Asp Ser Asp Glu
 355 360 365
 Ser Gly Asp Thr Asp Asp Pro Glu Glu Glu Glu Glu Glu Ala Pro Ala
 370 375 380
 Pro Asn Glu Glu Glu Thr Cys Glu Asn Asn Glu Ser Pro Lys Lys Lys
 385 390 395 400
 Thr Phe Lys Arg Arg Lys Ile Tyr Cys Gln Ile Thr Gln His Leu Leu
 405 410 415

Gln Asn His Lys Met Trp Lys Lys Val Ile Glu Glu Glu Gln
 420 425 430

<210> 19
 <211> 432
 <212> PRT
 <213> Homo sapiens

<400> 19
 Gln Gln Thr Asn Ile Glu Gln Glu Val Ser Leu Asp Leu Ile Leu Val
 1 5 10 15
 Glu Glu Tyr Asp Ser Leu Ile Glu Lys Met Ser Asn Trp Asn Phe Pro
 20 25 30
 Ile Phe Glu Leu Val Glu Lys Met Gly Glu Lys Ser Gly Arg Ile Leu
 35 40 45
 Ser Gln Val Met Tyr Thr Leu Phe Gln Asp Thr Gly Leu Leu Glu Ile
 50 55 60
 Phe Lys Ile Pro Thr Gln Gln Phe Met Asn Tyr Phe Arg Ala Leu Glu
 65 70 75 80
 Asn Gly Tyr Arg Asp Ile Pro Tyr His Asn Arg Ile His Ala Thr Asp
 85 90 95
 Val Leu His Ala Val Trp Tyr Leu Thr Thr Arg Pro Val Pro Gly Leu
 100 105 110
 Gln Gln Ile His Asn Gly Cys Gly Thr Gly Asn Glu Thr Asp Ser Asp
 115 120 125
 Gly Arg Ile Asn His Gly Arg Ile Ala Tyr Ile Ser Ser Lys Ser Cys
 130 135 140
 Ser Asn Pro Asp Glu Ser Tyr Gly Cys Leu Ser Ser Asn Ile Pro Ala
 145 150 155 160
 Leu Glu Leu Met Ala Leu Tyr Val Ala Ala Ala Met His Asp Tyr Asp
 165 170 175
 His Pro Gly Arg Thr Asn Ala Phe Leu Val Ala Thr Asn Ala Pro Gln
 180 185 190
 Ala Val Leu Tyr Asn Asp Arg Ser Val Leu Glu Asn His His Ala Ala
 195 200 205
 Ser Ala Trp Asn Leu Tyr Leu Ser Arg Pro Glu Tyr Asn Phe Leu Leu
 210 215 220
 His Leu Asp His Val Glu Phe Lys Arg Phe Arg Phe Leu Val Ile Glu
 225 230 235 240
 Ala Ile Leu Ala Thr Asp Leu Lys Lys His Phe Asp Phe Leu Ala Glu
 245 250 255

Phe Asn Ala Lys Ala Asn Asp Val Asn Ser Asn Gly Ile Glu Trp Ser
 260 265 270
 Asn Glu Asn Asp Arg Leu Leu Val Cys Gln Val Cys Ile Lys Leu Ala
 275 280 285
 Asp Ile Asn Gly Pro Ala Lys Val Arg Asp Leu His Leu Lys Trp Thr
 290 295 300
 Glu Gly Ile Val Asn Glu Phe Tyr Glu Gln Gly Asp Glu Glu Ala Asn
 305 310 315 320
 Leu Gly Leu Pro Ile Ser Pro Phe Met Asp Arg Ser Ser Pro Gln Leu
 325 330 335
 Ala Lys Leu Gln Glu Ser Phe Ile Thr His Ile Val Gly Pro Leu Cys
 340 345 350
 Asn Ser Tyr Asp Ala Ala Gly Leu Leu Pro Gly Gln Trp Leu Glu Ala
 355 360 365
 Glu Glu Asp Asn Asp Thr Glu Ser Gly Asp Asp Glu Asp Gly Glu Glu
 370 375 380
 Leu Asp Thr Glu Asp Glu Glu Met Glu Asn Asn Leu Asn Pro Lys Pro
 385 390 395 400
 Pro Arg Arg Lys Ser Arg Arg Arg Ile Phe Cys Gln Leu Met His His
 405 410 415
 Leu Thr Glu Asn His Lys Ile Trp Lys Glu Ile Val Glu Glu Glu Glu
 420 425 430

<210> 20
 <211> 352
 <212> PRT
 <213> Homo sapiens

<400> 20
 Met Val Ser Ser Asn Ile Ile Thr Pro Ile Ser Leu Asp Asp Val Pro
 1 5 10 15
 Pro Arg Ile Ala Arg Ala Met Glu Asn Glu Glu Tyr Trp Asp Phe Asp
 20 25 30
 Ile Phe Glu Leu Glu Ala Ala Thr His Asn Arg Pro Leu Ile Tyr Leu
 35 40 45
 Gly Leu Lys Met Phe Ala Arg Phe Gly Ile Cys Glu Phe Leu His Cys
 50 55 60
 Ser Glu Ser Thr Leu Arg Ser Trp Leu Gln Ile Ile Glu Ala Asn Tyr
 65 70 75 80

His	Ser	Ser	Asn	Pro	Tyr	His	Asn	Ser	Thr	His	Ser	Ala	Asp	Val	Leu
			85						90					95	
His	Ala	Thr	Ala	Tyr	Phe	Leu	Ser	Lys	Glu	Arg	Ile	Lys	Glu	Thr	Leu
			100					105					110		
Asp	Pro	Ile	Asp	Glu	Val	Ala	Ala	Leu	Ile	Ala	Ala	Thr	Ile	His	Asp
		115						120				125			
Val	Asp	His	Pro	Gly	Arg	Thr	Asn	Ser	Phe	Leu	Cys	Asn	Ala	Gly	Ser
	130					135					140				
Glu	Leu	Ala	Ile	Leu	Tyr	Asn	Asp	Thr	Ala	Val	Leu	Glu	Ser	His	His
145					150					155					160
Ala	Ala	Leu	Ala	Phe	Gln	Leu	Thr	Thr	Gly	Asp	Asp	Lys	Cys	Asn	Ile
				165					170					175	
Phe	Lys	Asn	Met	Glu	Arg	Asn	Asp	Tyr	Arg	Thr	Leu	Arg	Gln	Gly	Ile
			180					185					190		
Ile	Asp	Met	Val	Leu	Ala	Thr	Glu	Met	Thr	Lys	His	Phe	Glu	His	Val
	195						200					205			
Asn	Lys	Phe	Val	Asn	Ser	Ile	Asn	Lys	Pro	Leu	Ala	Thr	Leu	Glu	Glu
	210					215					220				
Asn	Gly	Glu	Thr	Asp	Lys	Asn	Gln	Glu	Val	Ile	Asn	Thr	Met	Leu	Arg
225					230					235					240
Thr	Pro	Glu	Asn	Arg	Thr	Leu	Ile	Lys	Arg	Met	Leu	Ile	Lys	Cys	Ala
				245					250					255	
Asp	Val	Ser	Asn	Pro	Cys	Arg	Pro	Leu	Gln	Tyr	Cys	Ile	Glu	Trp	Ala
			260					265					270		
Ala	Arg	Ile	Ser	Glu	Glu	Tyr	Phe	Ser	Gln	Thr	Asp	Glu	Glu	Lys	Gln
		275					280					285			
Gln	Gly	Leu	Pro	Val	Val	Met	Pro	Val	Phe	Asp	Arg	Asn	Thr	Cys	Ser
	290					295					300				
Ile	Pro	Lys	Ser	Gln	Ile	Ser	Phe	Ile	Asp	Tyr	Phe	Ile	Thr	Asp	Met
305					310					315					320
Phe	Asp	Ala	Trp	Asp	Ala	Phe	Val	Asp	Leu	Pro	Asp	Leu	Met	Gln	His
			325						330				335		
Leu	Asp	Asn	Asn	Phe	Lys	Tyr	Trp	Lys	Gly	Leu	Asp	Glu	Met	Lys	Leu
			340					345					350		

<210> 21

<211> 341

<212> PRT

<213> Homo sapiens

<400> 21

Met	Pro	Ile	Thr	Ile	Asn	Asp	Val	Pro	Pro	Cys	Ile	Ser	Gln	Leu	Leu
1				5					10					15	
Asp	Asn	Glu	Glu	Ser	Trp	Asp	Phe	Asn	Ile	Phe	Glu	Leu	Glu	Ala	Ile
		20						25					30		
Thr	His	Lys	Arg	Pro	Leu	Val	Tyr	Leu	Gly	Leu	Lys	Val	Phe	Ser	Arg
		35					40					45			
Phe	Gly	Val	Cys	Glu	Phe	Leu	Asn	Cys	Ser	Glu	Thr	Thr	Leu	Arg	Ala
	50					55					60				
Trp	Phe	Gln	Val	Ile	Glu	Ala	Asn	Tyr	His	Ser	Ser	Asn	Ala	Tyr	His
65					70					75				80	
Asn	Ser	Thr	His	Ala	Ala	Asp	Val	Leu	His	Ala	Thr	Ala	Phe	Phe	Leu
				85					90					95	
Gly	Lys	Glu	Arg	Val	Lys	Gly	Ser	Leu	Asp	Gln	Leu	Asp	Glu	Val	Ala
		100						105					110		
Ala	Leu	Ile	Ala	Ala	Thr	Val	His	Asp	Val	Asp	His	Pro	Gly	Arg	Thr
		115					120					125			
Asn	Ser	Phe	Leu	Cys	Asn	Ala	Gly	Ser	Glu	Leu	Ala	Val	Leu	Tyr	Asn
	130					135					140				
Asp	Thr	Ala	Val	Leu	Glu	Ser	His	His	Thr	Ala	Leu	Ala	Phe	Gln	Leu
145					150					155					160
Thr	Val	Lys	Asp	Thr	Lys	Cys	Asn	Ile	Phe	Lys	Asn	Ile	Asp	Arg	Asn
				165					170					175	
His	Tyr	Arg	Thr	Leu	Arg	Gln	Ala	Ile	Ile	Asp	Met	Val	Leu	Ala	Thr
			180					185					190		
Glu	Met	Thr	Lys	His	Phe	Glu	His	Val	Asn	Lys	Phe	Val	Asn	Ser	Ile
		195					200					205			
Asn	Lys	Pro	Met	Ala	Ala	Glu	Ile	Glu	Gly	Ser	Asp	Cys	Glu	Cys	Asn
	210					215					220				
Pro	Ala	Gly	Lys	Asn	Phe	Pro	Glu	Asn	Gln	Ile	Leu	Ile	Lys	Arg	Met
225					230					235				240	
Met	Ile	Lys	Cys	Ala	Asp	Val	Ala	Asn	Pro	Cys	Arg	Pro	Leu	Asp	Leu
				245					250					255	
Cys	Ile	Glu	Trp	Ala	Gly	Arg	Ile	Ser	Glu	Glu	Tyr	Phe	Ala	Gln	Thr
			260					265					270		
Asp	Glu	Glu	Lys	Arg	Gln	Gly	Leu	Pro	Val	Val	Met	Pro	Val	Phe	Asp
	275						280					285			
Arg	Asn	Thr	Cys	Ser	Ile	Pro	Lys	Ser	Gln	Ile	Ser	Phe	Ile	Asp	Tyr
	290					295					300				

Phe Ile Thr Asp Met Phe Asp Ala Trp Asp Ala Phe Ala His Leu Pro
 305 310 315 320

Ala Leu Met Gln His Leu Ala Asp Asn Tyr Lys His Trp Lys Thr Leu
 325 330 335

Asp Asp Leu Glu Cys
 340

<210> 22

<211> 334

<212> PRT

<213> Homo sapiens

<400> 22

Gly Thr Ala Val Ser Asn Ser Leu Asn Ile Leu Asp Asp Asp Tyr Asn
 1 5 10 15

Gly Gln Ala Lys Cys Met Leu Glu Lys Val Gly Asn Trp Asn Phe Asp
 20 25 30

Ile Phe Leu Phe Asp Arg Leu Thr Asn Gly Asn Ser Leu Val Ser Leu
 35 40 45

Thr Phe His Leu Phe Ser Leu His Gly Leu Ile Glu Tyr Phe His Leu
 50 55 60

Asp Met Met Lys Leu Arg Arg Phe Leu Val Met Ile Gln Glu Asp Tyr
 65 70 75 80

His Ser Gln Asn Pro Tyr His Asn Ala Val His Ala Ala Asp Val Thr
 85 90 95

Gln Ala Met His Cys Tyr Leu Lys Glu Pro Lys Leu Ala Asn Ser Val
 100 105 110

Thr Pro Trp Asp Ile Leu Leu Ser Leu Ile Ala Ala Ala Thr His Asp
 115 120 125

Leu Asp His Pro Gly Val Asn Gln Pro Phe Leu Ile Lys Thr Asn His
 130 135 140

Tyr Leu Ala Thr Leu Tyr Lys Asn Thr Ser Val Leu Glu Asn His His
 145 150 155 160

Trp Arg Ser Ala Val Gly Leu Leu Arg Glu Ser Gly Leu Phe Ser His
 165 170 175

Leu Pro Leu Glu Ser Arg Gln Gln Met Glu Thr Gln Ile Gly Ala Leu
 180 185 190

Ile Leu Ala Thr Asp Ile Ser Arg Gln Asn Glu Tyr Leu Ser Leu Phe
 195 200 205

Arg Ser His Leu Asp Arg Gly Asp Leu Cys Leu Glu Asp Thr Arg His
 210 215 220

Arg His Leu Val Leu Gln Met Ala Leu Lys Cys Ala Asp Ile Cys Asn
225 230 235 240

Pro Cys Arg Thr Trp Glu Leu Ser Lys Gln Trp Ser Glu Lys Val Thr
245 250 255

Glu Glu Phe Phe His Gln Gly Asp Ile Glu Lys Lys Tyr His Leu Gly
260 265 270

Val Ser Pro Leu Cys Asp Arg His Thr Glu Ser Ile Ala Asn Ile Gln
275 280 285

Ile Gly Phe Met Thr Tyr Leu Val Glu Pro Leu Phe Thr Glu Trp Ala
290 295 300

Arg Phe Ser Asn Thr Arg Leu Ser Gln Thr Met Leu Gly His Val Gly
305 310 315 320

Leu Asn Lys Ala Ser Trp Lys Gly Leu Gln Arg Glu Gln Ser
325 330

<210> 23

<211> 335

<212> PRT

<213> Homo sapiens

<400> 23

Gly Ile Ile Pro Gln Ala Pro Leu His Leu Leu Asp Glu Asp Tyr Leu
1 5 10 15

Gly Gln Ala Arg His Met Leu Ser Lys Val Gly Met Trp Asp Phe Asp
20 25 30

Ile Phe Leu Phe Asp Arg Leu Thr Asn Gly Asn Ser Leu Val Thr Leu
35 40 45

Leu Cys His Leu Phe Asn Thr His Gly Leu Ile His His Phe Lys Leu
50 55 60

Asp Met Val Thr Leu His Arg Phe Leu Val Met Val Gln Glu Asp Tyr
65 70 75 80

His Ser Gln Asn Pro Tyr His Asn Ala Val His Ala Ala Asp Val Thr
85 90 95

Gln Ala Met His Cys Tyr Leu Lys Glu Pro Lys Leu Ala Ser Phe Leu
100 105 110

Thr Pro Leu Asp Ile Met Leu Gly Leu Leu Ala Ala Ala His Asp
115 120 125

Val Asp His Pro Gly Val Asn Gln Pro Phe Leu Ile Lys Thr Asn His
130 135 140

His Leu Ala Asn Leu Tyr Gln Asn Met Ser Val Leu Glu Asn His His
145 150 155 160

Trp Arg Ser Thr Ile Gly Met Leu Arg Glu Ser Arg Leu Leu Ala His
 165 170 175
 Leu Pro Lys Glu Met Thr Gln Asp Ile Glu Gln Gln Leu Gly Ser Leu
 180 185 190
 Ile Leu Ala Thr Asp Ile Asn Arg Gln Asn Glu Phe Leu Thr Arg Leu
 195 200 205
 Lys Ala His Leu His Asn Lys Asp Leu Arg Leu Glu Asp Ala Gln Asp
 210 215 220
 Arg His Phe Met Leu Gln Ile Ala Leu Lys Cys Ala Asp Ile Cys Asn
 225 230 235 240
 Pro Cys Arg Ile Trp Glu Met Ser Lys Gln Trp Ser Glu Arg Val Cys
 245 250 255
 Glu Glu Phe Tyr Arg Gln Gly Glu Leu Glu Gln Lys Phe Glu Leu Glu
 260 265 270
 Ile Ser Pro Leu Cys Asn Gln Gln Lys Asp Ser Ile Pro Ser Ile Gln
 275 280 285
 Ile Gly Phe Met Ser Tyr Ile Val Glu Pro Leu Phe Arg Glu Trp Ala
 290 295 300
 His Phe Thr Gly Asn Ser Thr Leu Ser Glu Asn Met Leu Gly His Leu
 305 310 315 320
 Ala His Asn Lys Ala Gln Trp Lys Ser Leu Leu Pro Arg Gln His
 325 330 335

 <210> 24
 <211> 336
 <212> PRT
 <213> Homo sapiens

 <400> 24
 Leu Ser Tyr His Ala Ser Ala Ala Glu Glu Glu Thr Arg Glu Leu Gln
 1 5 10 15
 Ser Leu Ala Ala Ala Val Val Pro Ser Ala Gln Thr Leu Lys Ile Thr
 20 25 30
 Asp Phe Ser Phe Ser Asp Phe Glu Leu Ser Asp Leu Glu Thr Ala Leu
 35 40 45
 Cys Thr Ile Arg Met Phe Thr Asp Leu Asn Leu Val Gln Asn Phe Gln
 50 55 60
 Met Lys His Glu Val Leu Cys Arg Trp Ile Leu Ser Val Lys Lys Asn
 65 70 75 80
 Tyr Arg Lys Asn Val Ala Tyr His Asn Trp Arg His Ala Phe Asn Thr
 85 90 95

Ala Gln Cys Met Phe Ala Ala Leu Lys Ala Gly Lys Ile Gln Asn Lys
 100 105 110
 Leu Thr Asp Leu Glu Ile Leu Ala Leu Leu Ile Ala Ala Leu Ser His
 115 120 125
 Asp Leu Asp His Arg Gly Val Asn Asn Ser Tyr Ile Gln Arg Ser Glu
 130 135 140
 His Pro Leu Ala Gln Leu Tyr Cys His Ser Ile Met Glu His His His
 145 150 155 160
 Phe Asp Gln Cys Leu Met Ile Leu Asn Ser Pro Gly Asn Gln Ile Leu
 165 170 175
 Ser Gly Leu Ser Ile Glu Glu Tyr Lys Thr Thr Leu Lys Ile Ile Lys
 180 185 190
 Gln Ala Ile Leu Ala Thr Asp Leu Ala Leu Tyr Ile Lys Arg Arg Gly
 195 200 205
 Glu Phe Phe Glu Leu Ile Arg Lys Asn Gln Phe Asn Leu Glu Asp Pro
 210 215 220
 His Gln Lys Glu Leu Phe Leu Ala Met Leu Met Thr Ala Cys Asp Leu
 225 230 235 240
 Ser Ala Ile Thr Lys Pro Trp Pro Ile Gln Gln Arg Ile Ala Glu Leu
 245 250 255
 Val Ala Thr Glu Phe Phe Asp Gln Gly Asp Arg Glu Arg Lys Glu Leu
 260 265 270
 Asn Ile Glu Pro Thr Asp Leu Met Asn Arg Glu Lys Lys Asn Lys Ile
 275 280 285
 Pro Ser Met Gln Val Gly Phe Ile Asp Ala Ile Cys Leu Gln Leu Tyr
 290 295 300
 Glu Ala Leu Thr His Val Ser Glu Asp Cys Phe Pro Leu Leu Asp Gly
 305 310 315 320
 Cys Arg Lys Asn Arg Gln Lys Trp Gln Ala Leu Ala Glu Gln Gln Glu
 325 330 335

 <210> 25
 <211> 336
 <212> PRT
 <213> Homo sapiens

 <400> 25
 Leu Asp Val Leu Ser Tyr His Ala Thr Cys Ser Lys Ala Glu Val Asp
 1 5 10 15
 Lys Phe Lys Ala Ala Asn Ile Pro Leu Val Ser Glu Leu Ala Ile Asp
 20 25 30

Asp Ile His Phe Asp Asp Phe Ser Leu Asp Val Asp Ala Met Ile Thr
 35 40 45
 Ala Ala Leu Arg Met Phe Met Glu Leu Gly Met Val Gln Lys Phe Lys
 50 55 60
 Ile Asp Tyr Glu Thr Leu Cys Arg Trp Leu Leu Thr Val Arg Lys Asn
 65 70 75 80
 Tyr Arg Met Val Leu Tyr His Asn Trp Arg His Ala Phe Asn Val Cys
 85 90 95
 Gln Leu Met Phe Ala Met Leu Thr Thr Ala Gly Phe Gln Asp Ile Leu
 100 105 110
 Thr Glu Val Glu Ile Leu Ala Val Ile Val Gly Cys Leu Cys His Asp
 115 120 125
 Leu Asp His Arg Gly Thr Asn Asn Ala Phe Gln Ala Lys Ser Gly Ser
 130 135 140
 Ala Leu Ala Gln Leu Tyr Gly Thr Ser Ala Thr Leu Glu His His His
 145 150 155 160
 Phe Asn His Ala Val Met Ile Leu Gln Ser Glu Gly His Asn Ile Phe
 165 170 175
 Ala Asn Leu Ser Ser Lys Glu Tyr Ser Asp Leu Met Gln Leu Leu Lys
 180 185 190
 Gln Ser Ile Leu Ala Thr Asp Leu Thr Leu Tyr Phe Glu Arg Arg Thr
 195 200 205
 Glu Phe Phe Glu Leu Val Ser Lys Gly Glu Tyr Asp Trp Asn Ile Lys
 210 215 220
 Asn His Arg Asp Ile Phe Arg Ser Met Leu Met Thr Ala Cys Asp Leu
 225 230 235 240
 Gly Ala Val Thr Lys Pro Trp Glu Ile Ser Arg Gln Val Ala Glu Leu
 245 250 255
 Val Thr Ser Glu Phe Phe Glu Gln Gly Asp Arg Glu Arg Leu Glu Leu
 260 265 270
 Lys Leu Thr Pro Ser Ala Ile Phe Asp Arg Asn Arg Lys Asp Glu Leu
 275 280 285
 Pro Arg Leu Gln Leu Glu Trp Ile Asp Ser Ile Cys Met Pro Leu Tyr
 290 295 300
 Gln Ala Leu Val Lys Val Asn Val Lys Leu Lys Pro Met Leu Asp Ser
 305 310 315 320
 Val Ala Thr Asn Arg Ser Lys Trp Glu Glu Leu His Gln Lys Arg Leu
 325 330 335

<210> 26
 <211> 329
 <212> PRT
 <213> Homo sapiens

<400> 26
 Met Glu Lys Leu Ser Tyr His Ser Ile Cys Thr Ser Glu Glu Trp Gln
 1 5 10 15
 Gly Leu Met Gln Phe Thr Leu Pro Val Arg Leu Cys Lys Glu Ile Glu
 20 25 30
 Leu Phe His Phe Asp Ile Gly Pro Phe Glu Asn Met Trp Pro Gly Ile
 35 40 45
 Phe Val Tyr Met Val His Arg Ser Cys Gly Thr Ser Cys Phe Glu Leu
 50 55 60
 Glu Lys Leu Cys Arg Phe Ile Met Ser Val Lys Lys Asn Tyr Arg Arg
 65 70 75 80
 Val Pro Tyr His Asn Trp Lys His Ala Val Thr Val Ala His Cys Met
 85 90 95
 Tyr Ala Ile Leu Gln Asn Asn His Thr Leu Phe Thr Asp Leu Glu Arg
 100 105 110
 Lys Gly Leu Leu Ile Ala Cys Leu Cys His Asp Leu Asp His Arg Gly
 115 120 125
 Phe Ser Asn Ser Tyr Leu Gln Lys Phe Asp His Pro Leu Ala Ala Leu
 130 135 140
 Tyr Ser Thr Ser Thr Met Glu Gln His His Phe Ser Gln Thr Val Ser
 145 150 155 160
 Ile Leu Gln Leu Glu Gly His Asn Ile Phe Ser Thr Leu Ser Ser Ser
 165 170 175
 Glu Tyr Glu Gln Val Leu Glu Ile Ile Arg Lys Ala Ile Ile Ala Thr
 180 185 190
 Asp Leu Ala Leu Tyr Phe Gly Asn Arg Lys Gln Leu Glu Glu Met Tyr
 195 200 205
 Gln Thr Gly Ser Leu Asn Leu Asn Asn Gln Ser His Arg Asp Arg Val
 210 215 220
 Ile Gly Leu Met Met Thr Ala Cys Asp Leu Cys Ser Val Thr Lys Leu
 225 230 235 240
 Trp Pro Val Thr Lys Leu Thr Ala Asn Asp Ile Tyr Ala Glu Phe Trp
 245 250 255
 Ala Glu Gly Asp Glu Met Lys Lys Leu Gly Ile Gln Pro Ile Pro Met
 260 265 270

Met Asp Arg Asp Lys Lys Asp Glu Val Pro Gln Gly Gln Leu Gly Phe
 275 280 285

Tyr Asn Ala Val Ala Ile Pro Cys Tyr Thr Thr Leu Thr Gln Ile Leu
 290 295 300

Pro Pro Thr Glu Pro Leu Leu Lys Ala Cys Arg Asp Asn Leu Ser Gln
 305 310 315 320

Trp Glu Lys Val Ile Arg Gly Glu Glu
 325

<210> 27

<211> 345

<212> PRT

<213> Homo sapiens

<400> 27

Glu Val Tyr Gly Lys Glu Pro Trp Glu Cys Glu Glu Glu Glu Leu Ala
 1 5 10 15

Glu Ile Leu Gln Ala Glu Leu Pro Asp Ala Asp Lys Tyr Glu Ile Asn
 20 25 30

Lys Phe His Phe Ser Asp Leu Pro Leu Thr Glu Leu Glu Leu Val Lys
 35 40 45

Cys Gly Ile Gln Met Tyr Tyr Glu Leu Lys Val Val Asp Lys Phe His
 50 55 60

Ile Pro Gln Glu Ala Leu Val Arg Phe Met Tyr Ser Leu Ser Lys Gly
 65 70 75 80

Tyr Arg Lys Ile Thr Tyr His Asn Trp Arg His Gly Phe Asn Val Gly
 85 90 95

Gln Thr Met Phe Ser Leu Leu Val Thr Gly Lys Leu Lys Arg Tyr Phe
 100 105 110

Thr Asp Leu Glu Ala Leu Ala Met Val Thr Ala Ala Phe Cys His Asp
 115 120 125

Ile Asp His Arg Gly Thr Asn Asn Leu Tyr Gln Met Lys Ser Gln Asn
 130 135 140

Pro Leu Ala Lys Leu His Gly Ser Ser Ile Leu Glu Arg His His Leu
 145 150 155 160

Glu Phe Gly Lys Thr Leu Leu Arg Asp Glu Ser Leu Asn Ile Phe Gln
 165 170 175

Asn Leu Asn Arg Arg Gln His Glu His Ala Ile His Met Met Asp Ile
 180 185 190

Ala Ile Ile Ala Thr Asp Leu Ala Leu Tyr Phe Lys Lys Arg Thr Met
 195 200 205

Phe Gln Lys Ile Val Asp Gln Ser Lys Thr Tyr Glu Ser Glu Gln Glu
 210 215 220
 Trp Thr Gln Tyr Met Met Leu Glu Gln Thr Arg Lys Glu Ile Val Met
 225 230 235 240
 Ala Met Met Met Thr Ala Cys Asp Leu Ser Ala Ile Thr Lys Pro Trp
 245 250 255
 Glu Val Gln Ser Gln Val Ala Leu Leu Val Ala Ala Glu Phe Trp Glu
 260 265 270
 Gln Gly Asp Leu Glu Arg Thr Val Leu Gln Gln Asn Pro Ile Pro Met
 275 280 285
 Met Asp Arg Asn Lys Ala Asp Glu Leu Pro Lys Leu Gln Val Gly Phe
 290 295 300
 Ile Asp Phe Val Cys Thr Phe Val Tyr Lys Glu Phe Ser Arg Phe His
 305 310 315 320
 Glu Glu Ile Thr Pro Met Leu Asp Gly Ile Thr Asn Asn Arg Lys Glu
 325 330 335
 Trp Lys Ala Leu Ala Asp Glu Tyr Asp
 340 345

<210> 28
 <211> 345
 <212> PRT
 <213> Homo sapiens

<400> 28
 Ala Arg Leu Gly Lys Glu Pro Ala Asp Cys Asp Glu Asp Glu Leu Gly
 1 5 10 15
 Glu Ile Leu Lys Glu Glu Leu Pro Gly Pro Thr Thr Phe Asp Ile Tyr
 20 25 30
 Glu Phe His Phe Ser Asp Leu Glu Cys Thr Glu Leu Asp Leu Val Lys
 35 40 45
 Cys Gly Ile Gln Met Tyr Tyr Glu Leu Gly Val Val Arg Lys Phe Gln
 50 55 60
 Ile Pro Gln Glu Val Leu Val Arg Phe Leu Phe Ser Ile Ser Lys Gly
 65 70 75 80
 Tyr Arg Arg Ile Thr Tyr His Asn Trp Arg His Gly Phe Asn Val Ala
 85 90 95
 Gln Thr Met Phe Thr Leu Leu Met Thr Gly Lys Leu Lys Ser Tyr Tyr
 100 105 110
 Thr Asp Leu Glu Ala Phe Ala Met Val Thr Ala Gly Leu Cys His Asp
 115 120 125

Ile Asp His Arg Gly Thr Asn Asn Leu Tyr Gln Met Lys Ser Gln Asn
 130 135 140
 Pro Leu Ala Lys Leu His Gly Ser Ser Ile Leu Glu Arg His His Leu
 145 150 155 160
 Glu Phe Gly Lys Phe Leu Leu Ser Glu Glu Thr Leu Asn Ile Tyr Gln
 165 170 175
 Asn Leu Asn Arg Arg Gln His Glu His Val Ile His Leu Met Asp Ile
 180 185 190
 Ala Ile Ile Ala Thr Asp Leu Ala Leu Tyr Phe Lys Lys Arg Ala Met
 195 200 205
 Phe Gln Lys Ile Val Asp Glu Ser Lys Asn Tyr Gln Asp Lys Lys Ser
 210 215 220
 Trp Val Glu Tyr Leu Ser Leu Glu Thr Thr Arg Lys Glu Ile Val Met
 225 230 235 240
 Ala Met Met Met Thr Ala Cys Asp Leu Ser Ala Ile Thr Lys Pro Trp
 245 250 255
 Glu Val Gln Ser Lys Val Ala Leu Leu Val Ala Ala Glu Phe Trp Glu
 260 265 270
 Gln Gly Asp Leu Glu Arg Thr Val Leu Asp Gln Gln Pro Ile Pro Met
 275 280 285
 Met Asp Arg Asn Lys Ala Ala Glu Leu Pro Lys Leu Gln Val Gly Phe
 290 295 300
 Ile Asp Phe Val Cys Thr Phe Val Tyr Lys Glu Phe Ser Arg Phe His
 305 310 315 320
 Glu Glu Ile Leu Pro Met Phe Asp Arg Leu Gln Asn Asn Arg Lys Glu
 325 330 335
 Trp Lys Ala Leu Ala Asp Glu Tyr Glu
 340 345

 <210> 29
 <211> 345
 <212> PRT
 <213> Homo sapiens

 <400> 29
 Lys Leu Asn Val Asp Val Ile Asp Asp Cys Glu Glu Lys Gln Leu Val
 1 5 10 15
 Ala Ile Leu Lys Glu Asp Leu Pro Asp Pro Arg Ser Ala Glu Leu Tyr
 20 25 30
 Glu Phe Arg Phe Ser Asp Phe Pro Leu Thr Glu His Gly Leu Ile Lys
 35 40 45

Cys Gly Ile Arg Leu Phe Phe Glu Ile Asn Val Val Glu Lys Phe Lys
 50 55 60

Val Pro Val Glu Val Leu Thr Arg Trp Met Tyr Thr Val Arg Lys Gly
 65 70 75 80

Tyr Arg Ala Val Thr Tyr His Asn Trp Gln His Gly Phe Asn Val Gly
 85 90 95

Gln Thr Met Phe Thr Leu Leu Met Thr Gly Arg Leu Lys Lys Tyr Tyr
 100 105 110

Thr Asp Leu Glu Ala Phe Ala Met Leu Ala Ala Ala Phe Cys His Asp
 115 120 125

Ile Asp His Arg Gly Thr Asn Asn Leu Tyr Gln Met Lys Ser Thr Ser
 130 135 140

Pro Leu Ala Arg Leu His Gly Ser Ser Ile Leu Glu Arg His His Leu
 145 150 155 160

Glu Tyr Ser Lys Thr Leu Leu Gln Asp Glu Ser Leu Asn Ile Phe Gln
 165 170 175

Asn Leu Asn Lys Arg Gln Phe Glu Thr Val Ile His Leu Phe Glu Val
 180 185 190

Ala Ile Ile Ala Thr Asp Leu Ala Leu Tyr Phe Lys Lys Arg Thr Met
 195 200 205

Phe Gln Lys Ile Val Asp Ala Cys Glu Gln Met Gln Thr Glu Glu Glu
 210 215 220

Ala Ile Lys Tyr Val Thr Val Asp Pro Thr Lys Lys Glu Ile Ile Met
 225 230 235 240

Ala Met Met Met Thr Ala Cys Asp Leu Ser Ala Ile Thr Lys Pro Trp
 245 250 255

Glu Val Gln Ser Gln Val Ala Leu Met Val Ala Asn Glu Phe Trp Glu
 260 265 270

Gln Gly Asp Leu Glu Arg Thr Val Leu Gln Gln Gln Pro Ile Pro Met
 275 280 285

Met Asp Arg Asn Lys Arg Asp Glu Leu Pro Lys Leu Gln Val Gly Phe
 290 295 300

Ile Asp Phe Val Cys Thr Phe Val Tyr Lys Glu Phe Ser Arg Phe His
 305 310 315 320

Lys Glu Ile Thr Pro Met Leu Ser Gly Leu Gln Asn Asn Arg Val Glu
 325 330 335

Trp Lys Ser Leu Ala Asp Glu Tyr Asp
 340 345

<210> 30
 <211> 334
 <212> PRT
 <213> Homo sapiens

<400> 30
 Met Met Met Tyr His Met Lys Val Ser Asp Asp Glu Tyr Thr Lys Leu
 1 5 10 15
 Leu His Asp Gly Ile Gln Pro Val Ala Ala Ile Asp Ser Asn Phe Ala
 20 25 30
 Ser Phe Thr Tyr Thr Pro Arg Ser Leu Pro Glu Asp Asp Thr Ser Met
 35 40 45
 Ala Ile Leu Ser Met Leu Gln Asp Met Asn Phe Ile Asn Asn Tyr Lys
 50 55 60
 Ile Asp Cys Pro Thr Leu Ala Arg Phe Cys Leu Met Val Lys Lys Gly
 65 70 75 80
 Tyr Arg Asp Pro Pro Tyr His Asn Trp Met His Ala Phe Ser Val Ser
 85 90 95
 His Phe Cys Tyr Leu Leu Tyr Lys Asn Leu Glu Leu Thr Asn Tyr Leu
 100 105 110
 Glu Asp Ile Glu Ile Phe Ala Leu Phe Ile Ser Cys Met Cys His Asp
 115 120 125
 Leu Asp His Arg Gly Thr Asn Asn Ser Phe Gln Val Ala Ser Lys Ser
 130 135 140
 Val Leu Ala Ala Leu Tyr Ser Ser Glu Gly Ser Val Met Glu Arg His
 145 150 155 160
 His Phe Ala Gln Ala Ile Ala Ile Leu Asn Thr His Gly Cys Asn Ile
 165 170 175
 Phe Asp His Phe Ser Arg Lys Asp Tyr Gln Arg Met Leu Asp Leu Met
 180 185 190
 Arg Asp Ile Ile Leu Ala Thr Asp Leu Ala His His Leu Arg Ile Phe
 195 200 205
 Lys Asp Leu Gln Lys Met Ala Glu Val Gly Tyr Asp Arg Asn Asn Lys
 210 215 220
 Gln His His Arg Leu Leu Leu Cys Leu Leu Met Thr Ser Cys Asp Leu
 225 230 235 240
 Ser Asp Gln Thr Lys Gly Trp Lys Thr Thr Arg Lys Ile Ala Glu Leu
 245 250 255
 Ile Tyr Lys Glu Phe Phe Ser Gln Gly Asp Leu Glu Lys Ala Met Gly
 260 265 270

Asn Arg Pro Met Glu Met Met Asp Arg Glu Lys Ala Tyr Ile Pro Glu
 275 280 285

Leu Gln Ile Ser Phe Met Glu His Ile Ala Met Pro Ile Tyr Lys Leu
 290 295 300

Leu Gln Asp Leu Phe Pro Lys Ala Ala Glu Leu Tyr Glu Arg Val Ala
 305 310 315 320

Ser Asn Arg Glu His Trp Thr Lys Val Ser His Lys Phe Thr
 325 330

<210> 31

<211> 333

<212> PRT

<213> Homo sapiens

<400> 31

Ser Phe Leu Asp Asn His Lys Lys Leu Thr Pro Arg Arg Asp Val Pro
 1 5 10 15

Thr Tyr Pro Lys Tyr Leu Leu Ser Pro Glu Thr Ile Glu Ala Leu Arg
 20 25 30

Lys Pro Thr Phe Asp Val Trp Leu Trp Glu Pro Asn Glu Met Leu Ser
 35 40 45

Cys Leu Glu His Met Tyr His Asp Leu Gly Leu Val Arg Asp Phe Ser
 50 55 60

Ile Asn Pro Val Thr Leu Arg Arg Trp Leu Phe Cys Val His Asp Asn
 65 70 75 80

Tyr Arg Asn Asn Pro Phe His Asn Phe Arg His Cys Phe Cys Val Ala
 85 90 95

Gln Met Met Tyr Ser Met Val Trp Leu Cys Ser Leu Gln Glu Lys Phe
 100 105 110

Ser Gln Thr Asp Ile Leu Ile Leu Met Thr Ala Ala Ile Cys His Asp
 115 120 125

Leu Asp His Pro Gly Tyr Asn Asn Thr Tyr Gln Ile Asn Ala Arg Thr
 130 135 140

Glu Leu Ala Val Arg Tyr Asn Asp Ile Ser Pro Leu Glu Asn His His
 145 150 155 160

Cys Ala Val Ala Phe Gln Ile Leu Ala Glu Pro Glu Cys Asn Ile Phe
 165 170 175

Ser Asn Ile Pro Pro Asp Gly Phe Lys Gln Ile Arg Gln Gly Met Ile
 180 185 190

Thr Leu Ile Leu Ala Thr Asp Met Ala Arg His Ala Glu Ile Met Asp
 195 200 205

Ser Phe Lys Glu Lys Met Glu Asn Phe Asp Tyr Ser Asn Glu Glu His
 210 215 220
 Met Thr Leu Leu Lys Met Ile Leu Ile Lys Cys Cys Asp Ile Ser Asn
 225 230 235 240
 Glu Val Arg Pro Met Glu Val Ala Glu Pro Trp Val Asp Cys Leu Leu
 245 250 255
 Glu Glu Tyr Phe Met Gln Ser Asp Arg Glu Lys Ser Glu Gly Leu Pro
 260 265 270
 Val Ala Pro Phe Met Asp Arg Asp Lys Val Thr Lys Ala Thr Ala Gln
 275 280 285
 Ile Gly Phe Ile Lys Phe Val Leu Ile Pro Met Phe Glu Thr Val Thr
 290 295 300
 Lys Leu Phe Pro Met Val Glu Glu Ile Met Leu Gln Pro Leu Trp Glu
 305 310 315 320
 Ser Arg Asp Arg Tyr Glu Glu Leu Lys Arg Ile Asp Asp
 325 330

<210> 32
 <211> 124
 <212> PRT
 <213> Homo sapiens

<400> 32
 Glu Glu Glu Thr Arg Glu Leu Gln Ser Leu Ala Ala Ala Val Val Pro
 1 5 10 15
 Ser Ala Gln Thr Leu Lys Ile Thr Asp Phe Ser Phe Ser Asp Phe Glu
 20 25 30
 Leu Ser Asp Leu Glu Thr Ala Leu Cys Thr Ile Arg Met Phe Thr Asp
 35 40 45
 Leu Asn Leu Val Gln Asn Phe Gln Met Lys His Glu Val Leu Cys Arg
 50 55 60
 Trp Ile Leu Ser Val Lys Lys Asn Tyr Arg Lys Asn Val Ala Tyr His
 65 70 75 80
 Asn Trp Arg His Ala Phe Asn Thr Ala Gln Cys Met Phe Ala Ala Leu
 85 90 95
 Lys Ala Gly Lys Ile Gln Asn Lys Leu Thr Asp Leu Glu Ile Leu Ala
 100 105 110
 Leu Leu Ile Ala Ala Leu Ser His Asp Leu Asp His
 115 120

<210> 33
 <211> 118
 <212> PRT
 <213> Homo sapiens

<400> 33
 Leu Ala Gln Leu Tyr Cys His Ser Ile Met Glu His His His Phe Asp
 1 5 10 15
 Gln Cys Leu Met Ile Leu Asn Ser Pro Gly Asn Gln Ile Leu Ser Gly
 20 25 30
 Leu Ser Ile Glu Glu Tyr Lys Thr Thr Leu Lys Ile Ile Lys Gln Ala
 35 40 45
 Ile Leu Ala Thr Asp Leu Ala Leu Tyr Ile Lys Arg Arg Gly Glu Phe
 50 55 60
 Phe Glu Leu Ile Arg Lys Asn Gln Phe Asn Leu Glu Asp Pro His Gln
 65 70 75 80
 Lys Glu Leu Phe Leu Ala Met Leu Met Thr Ala Cys Asp Leu Ser Ala
 85 90 95
 Ile Thr Lys Pro Trp Pro Ile Gln Gln Arg Ile Ala Glu Leu Val Ala
 100 105 110
 Thr Glu Phe Phe Asp Gln
 115

<210> 34
 <211> 59
 <212> PRT
 <213> Homo sapiens

<400> 34
 Leu Met Asn Arg Glu Lys Lys Asn Lys Ile Pro Ser Met Gln Val Gly
 1 5 10 15
 Phe Ile Asp Ala Ile Cys Leu Gln Leu Tyr Glu Ala Leu Thr His Val
 20 25 30
 Ser Glu Asp Cys Phe Pro Leu Leu Asp Gly Cys Arg Lys Asn Arg Gln
 35 40 45
 Lys Trp Gln Ala Leu Ala Glu Gln Gln Glu Lys
 50 55